UNITED STATES PATENT APPLICATION

OF

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FOR

ARRANGEMENT IN A COMPUTER SYSTEM

Field of the Invention

This invention concerns an arrangement for providing an electronic information service in accordance with the preamble to claims 1 and 12. The invention also concerns a corresponding method in accordance with claims 11 and 14.

Technical Background

A large number of interactive information services are offered to users who are connected to the Internet. These web services give users the ability to read information which is written into the service by other users and also to enter information themselves, for example as a contribution on a matter or as a comment on a previous contribution submitted by another user.

An example of such services is so-called BBSs. Another example is so-called "chat" web pages. In the latter messages are continuously contributed by users if the service is frequently visited. The most recently contributed message is added at the bottom of the service's page and earlier messages are scrolled upwards on the screen. With such a service users can have a written conversation in real time.

Web pages of the "chat" type, below called chat pages, have become very popular, even though they have a number of limitations. If new contributions come in at a fast rate, the earlier contributions scroll quickly out of sight. This can make it difficult to follow a conver-

sation on the chat page. It can also be difficult to tell which of the earlier contributions a later contribution is commenting on, even though a note to this effect can be made at the start of the later contribution. This is because there can be several other contributions between a contribution making a comment and the contribution to which the comment is referring.

If a chat page is very busy a conversation on it can be very difficult to follow. Certain web sites therefore now offer a number of so-called "chatrooms", that is chat pages for users with particular interests or within particular age groups. This reduces the load on each individual chat page, as the users can be spread out.

Known chat pages are based on written text and are therefore principally a verbal means for expression. However, there are examples of the use of non-verbal symbol combinations, for example ":-)" or ":-(" to indicate moods and the like.

Summary of the Invention

This invention aims to eliminate the above-mentioned limitations either completely or partly.

This aim is achieved by an arrangement for providing an information service in a computer system according to claims 1 and 12, and by the corresponding method according to claims 11 and 14.

According to a first aspect of the invention, there is provided more precisely an arrangement and a corre-

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sponding method in a computer system. The arrangement aims to provide an electronic information service in a computer system which is connected to a network. A plurality of users can enter information into and read information from the electronic information service in the computer system via the network. The arrangement is characterized by means for creating a first information object comprising a partial area of a virtual pixel area. The pixel area contains information entered by users from among the above-mentioned plurality of users. In addition there are means for transmitting the first information object via the network to a first of the above-mentioned number of users, means for receiving a second information object from the first user corresponding to at least part of the above-mentioned partial area of the virtual pixel area, and means for updating the virtual pixel area utilizing the received information object.

A user can thus download a certain part of the pixel area, read the messages on this partial area and add his own message to it. Then the user can resubmit this modified partial area, after which the pixel area is updated by the added messages.

In such an information service messages can be inserted in selectable positions on the pixel area. The messages are not moved, but can remain in the same place on the area. It is therefore easier for a user to relate his message to an earlier message, by placing the message

next to it. It is also much easier to follow a conversation, as messages not connected with the conversation can be placed elsewhere on the pixel area.

By the use of a pixel area the information service can, if required, be released from text format, which means that more expressive messages can be submitted. For example, figures of various types can be included.

According to a preferred embodiment, the virtual pixel area contains a position-coding pattern. Alternatively the means for creating the first information object can also add a position-coding pattern to this. This allows the user after printing out the selected partial area to write a message using a drawing device which uses a position-coded base, that is a base provided with a position-coding pattern. Such a position-coding pattern can be designed in the way described in the Applicant's Patent Applications SE 9901954-9 and SE 9903541-2, which is hereby incorporated by reference. These were submitted on 28 May 1999 and 1 October 1999 respectively and were therefore not publicly available at the time of the submission of this application. A drawing device can thus comprise a pen which deposits ink on the base while at the same time an optical sensor detects positions on the base.

The means for creating the first information object preferably also comprises means for receiving a request from the first user concerning the transmission of a par-

ticular partial area of the virtual area. This partial area is inserted into the information object. This allows the user to read and write messages anywhere on the area.

According to other preferred embodiments, the virtual pixel area contains a background image. Alternatively the means for creating the first information object can also add a background image to this. This makes it easier for the user to orientate himself on the area.

The virtual pixel area can consist of a graphical file. However, the area consists preferably of a number of graphical files, which allows very large total pixel areas to be used in an effective way.

The means for creating a first information object preferably also adds an information image to this information object. This makes it possible for the system to transmit, for example, advertisements to the user, which can be used as a source of income. The information image is preferably selected based on user parameters, specific to the first user and available to the computer system. This makes possible, for example, customized advertising.

According to a further preferred embodiment, the computer system also comprises means for notifying a second user when a partial area of the pixel area has been updated. This makes it possible for a user to be kept up to date with what is written within a particular partial area without any effort on his part.

According to a second aspect of this invention, there are provided an arrangement and a corresponding method in a computer system which is connected to a network where the system comprises an electronic information service. Users can enter messages into and read messages from the electronic information service via the network.

The arrangement is characterized in that the service comprises a virtual area consisting of a matrix of pixels which is at least two-dimensional, and means for receiving a message from a user, means for receiving a position indication associated with the message from the user and means for placing the message in a position on the area, which position is determined by the position indication. The advantages of this aspect of the invention are shown in the discussion above.

According to a preferred embodiment, the arrangement also comprises means for removing messages after a particular period of time. This prevents the information service being filled up so that new messages cannot be entered.

Brief Description of the Drawings

Fig. 1 illustrates diagrammatically an arrangement in a computer system in accordance with the invention.

Fig. 2 shows the work of an arrangement in a computer system of the type shown in Fig. 1.

Fig. 3 shows the work of a simplified form of an arrangement in a computer system in accordance with the invention.

Fig. 4 shows preferred embodiments of a virtual pixel area in accordance with the invention.

Fig. 5 shows the function of a preferred form of the invention, where position coding is used.

Description of Preferred Embodiments

Fig. 1 illustrates diagrammatically an arrangement in a computer system 1 in accordance with the invention. The computer system 1 is connected via the Internet 3 to the personal computers 5 of a number of users. These users can communicate with the computer system 1 and are allowed both to read and write information in an electronic information service 7 in the computer system 1. The information service 7 is designed as a virtual pixel area 9, which will be described below in greater detail. The pixel area 9 consists in its simplest form of a two-dimensional matrix of pixels 11 which can assume at least two states, "one"/"black" or "zero"/"white". The size of the pixel area 9 is preferably considerably larger than the pixel area of a normal computer monitor screen. The size can, for example, be 10000*10000 pixels, but can also be much larger. A user equipped with a normal personal computer 5 can thus only see a small part of the pixel area 9 at a time in full resolution. The large format of the pixel area 9 allows room, however, for a large

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number of messages 13 of various kinds at any particular time.

A user who uses the service can ask to view various partial areas in various resolutions. Thus a user can, for example, start a session by viewing the whole area at very low resolution. The messages which are entered on the area will then probably not be legible. Instead the areas with messages will appear as darker regions in the image which the user sees. A pixel on the user's screen will represent perhaps an average of hundreds of pixels on the virtual area. The user can then mark a smaller part of the area which he wants to look at more closely. A request is then sent to the computer system which creates and retransmits a new file with the content of this area. The user can also jump around in the area, for example using the arrow keys on his personal computer, until he finds a place on the area where he wants to write a message. The system preferably only permits writing in images shown in the highest resolution, that is when there is a one-to-one relationship between pixels in the computer system's virtual pixel area and pixels in the image which is shown on the user's personal computer. A background image is preferably achieved, for example in the form of a map on the pixel area, in order to make it easier for the user to orientate himself on the area. This also produces intuitive "chatrooms", for example a district, a city or a mountain range.

Fig. 2 shows the work 21 of an arrangement in a computer system 1 of the type shown in Fig. 1 and with reference also to this Figure. In a first step 23 a request is received from a user via the network 3 for the transmission of a particular part of the virtual pixel area 9. The computer system 1 is provided with means for receiving this request. By means in the computer system is meant in general software which contains program steps which cause the system to perform certain operations. The fact that certain operations are carried out means conversely that the system includes software to carry these out. The arrangement also comprises means for creating in a second step 25 an information object 17 in the form of a file which contains a copy 15' of the requested partial area 15 of the virtual pixel area 9 of the computer system 1.

The created file 17 can have various formats. The simplest form consists of a copy of the requested partial area of the virtual pixel area. If a partial area of the pixel area has been requested which is larger than the user's monitor screen can display in full resolution, the system can handle this in various ways. The partial area can either be incorporated in its existing state in the created information object 17 or the resolution of the image area can be reduced so that it can be displayed in its entirety on the monitor screen of the user making the request. In the first case the user can instead choose to

display different parts of the image area, for example by using the arrow keys on his personal computer 5.

In an optional third step 27 a superimposed position-coding pattern and/or a background image can be added. Alternatively these can be incorporated in the virtual pixel area. The use of the pixel area and background image will be described in greater detail below.

In an optional fourth step 29 an information image 19 is added to the created information object 17. This can also be superimposed, but it is preferably combined with the copy 15' of the requested partial area 15 to form a composite image comprising two partial areas. The added information image 19 can preferably consist of an advertising message or other information which the owner of the computer system 1 wants to transmit to the user. The information image can preferably be selected based on parameters specific to the user, for example his age, hobbies, etc. It is assumed that such parameters are available to the computer system 1.

In a fifth step 31 the system 1 transmits the created information object 17 to the user via the network 3. The user can then read the message written in the requested partial area and the text and diagrams in the added information image. The user can also add information himself using various input devices. This can either be carried out in a copy of the transmitted information

object or can be carried out directly in the same. The added information can consist of text or figures.

If the user has made an addition to the partial area in the transmitted information object and wants this to be incorporated in the virtual pixel area of the computer system, an information object is sent back to the computer system. It can be the information object which the user received and in which he has made changes or it can be a new information object generated based on this. It is only necessary to resend the part of the partial area 15 transmitted to the user in which the user has made changes.

The computer system thus receives a second information object from the user in a sixth step 33. The received object also contains an indication of which partial area of the virtual pixel area the received object concerns, that is the location of the received partial area in the pixel area. Thereafter the computer system updates the virtual pixel area 9 in a seventh step 35 using the received information object, so that the user's added message can be read by other users of the system.

In an optional seventh step 37 the computer system notifies another user that a partial area which this user wanted to monitor has been updated.

Fig. 3 shows the work 41 of a simplified form of an arrangement in a computer system according to the invention. Also here the invention comprises a virtual pixel

area. In a first step 43 a message is received from a user. In a second step 45 an indication is received in the form of a position indication of where on the virtual pixel area the user wants the received message to be placed. The order of these two steps can be reversed. In a third step 47 the message is placed in the location on the virtual pixel area indicated by the position indication.

Fig. 4 shows preferred embodiments of a virtual pixel area 51 according to the invention. The area consists preferably of a number of files 53, 53', 53", etc, stored on a digital storage medium in the computer system. Each file consists of a preferably two-dimensional matrix of pixels 55. In its simplest form each pixel can assume the value "one" and the value "zero", corresponding to black and white when a partial area of the pixel area is displayed. The pixels can, however, preferably assume more values and can thereby be made to represent colors and gray scales. Each pixel can also be given a time value, that is the time when the value of the pixel was last changed by writing a message. This makes it possible to introduce functions in the system so that a message is deleted after a certain period of time, in order to avoid the virtual pixel area being completely filled up, preventing the writing of new messages. It is also possible to make a message fade away after a certain period of time by making the pixels incorporated in it

assume increasingly paler gray-scale values. The virtual pixel area can also consist of a matrix in more than two dimensions, whereby several layers can be achieved. One layer can then contain a background image, which is displayed to the users who, however, are not able to write information in this layer. Instead the users can write information in a drawing layer which is superimposed on the background layer when this is displayed.

The advantage of letting the virtual area 51 consist of a number of graphical files 53, 53', 53", is that only a set of small files need to be updated when a user adds information, instead of a very large file having to be updated. For updating a partial area 57 of the virtual area normally only one to four files (53', 53") are updated, even though the pixel area perhaps consists of hundreds of files. In this way very large pixel areas can be used without an updating of the area taking a very long time. A transmitted partial area is normally much smaller than the virtual pixel area.

The file format of the pixel area can be a compressed graphical format, for example of the type .jpg or .gif. However, it is preferably in a non-compressed format, for example of the type .bmp or .tiff. The advantage of this is that non-compressed files are quicker to open for editing when updating the pixel area. Nor are there great benefits in compressing these files, as they are not transmitted over narrow-band channels. The infor-

mation objects (17, Fig. 1) which are created at the request of the user out of a partial area of the virtual area can, on the other hand, preferably consist of compressed files as these are transmitted over the computer network (3, Fig. 1).

Fig. 5 shows the function of a preferred form of the invention where position coding is used. As a first alternative the pixel area 61 contains a position-coding pattern 63, preferably in a separate layer. As a second alternative this pattern can be superimposed on the partial area 65 of the system's pixel area 61 which a user selects, when the information object is created which is intended to be transmitted to the user. As a third alternative this pattern can be added by an application in the personal computer 67 used by the user.

When the user prints out the requested partial area on a local printer the position-coding pattern 63 appears on the printed-out area 69. The position-coding pattern 63 can advantageously be of such a type as shown in the Applicant's Patent Applications SE 9901954-9 and SE 9903541-2, where each position is encoded by a number of symbols and where one symbol is used to encode a number of positions. The position-coding pattern 63 shown is constructed as shown in SE 9901954-9, where a large dot represents a "one" and a small dot represents a "zero". It is, however, also possible to design the position-coding pattern 7 as described in SE 9903541-2, where

different displacements of a dot in relation to a raster point encode different symbol values.

A drawing device 71 is arranged to detect positions on the printed-out area 69 utilizing the position-coding pattern 63. When the drawing device 71 is moved relative to the area 69 and in contact with this, the drawing device 71 records a series of positions on the area 69, which series is transmitted to the user's personal computer 67. The transmission of the position information can be carried out using various types of cable or by means of an infrared link. However, a short-range radio link is preferably used, for example in accordance with the BLUETOOTH standard. The position information can be transmitted as a set of pairs of co-ordinates, but preferably the drawing device first converts the series of pairs of co-ordinates into a polygon train which is then transmitted. When the user draws on the printed-out area 71, what was drawn can therefore be recorded by an application in the user's personal computer 67. The records 73 which are made can then be used to update the virtual pixel area 61 in the information service as shown above.

As a further possibility the user can map a position-coded base he already has in his possession against a partial area that he has downloaded. Thereafter messages can be added to a partial area which has been downloaded by writing on the base with a drawing device such as that described above.

The scope of the patent protection applied for is not restricted to the embodiments described above. The invention can be varied and changed in a number of ways within the framework of the following patent claims.